Detailed Action

Preamble

In order to more clearly demark and identify the present invention and architectures, and especially how the present invention is different from prior art, we offer this preamble, in the goal of clearifying the nature of this invention.

The instant patent application which includes a summary of the invention and description of a single preferred embodiment. The specific embodiment provided is not the only possible embodiment of the invention, but exists amongst a number of embodiments that each comprise specific measures unique to each embodiment.

The specific example embodiment detailed in the patent application is of a system where the broadcast element/s of the system, that is/are upstream of diffusively distributed storage elements, is-a/are geo-synchronous satellite/s, and where the diffusively distributed storage elements of the system, that are downstream of the broadcast element/s of the system, are fixed-location caches, immediate to the end user on a local LAN of one or another type, or simply accessed directly by the user – i.e., the cache is within very-low cost access to the user. Some of the unique characterstics are described in the summary of the invention, overcoming several deficiencies of the Internet models – mentioned in the specification, which can be summarized as econometrics of a comparatively costly architecture due to not scaling well with volume of traffic diffusion. The present invention automates the moving and storing of content so that content can be autonomously admitted to, moved and stored within, or autonomously retrieved from the system, but with network econometrics far less costly to build and operate than the Internet's econometrics – so providing a resource that is far less costly.

In addition to a preferred embodiment of the invention detailed in the specification summary patent application, the main other specific embodiments arise when either when the broadcast element/s of the system, upstream of diffusively distributed storage elements, is-a/are terrestrial-based broadcast resources, e.g. cell towers, television towers, cable-TV head ends, etc., used as broadcasting elements within the system of the present invention, or when the diffusively distributed storage elements of the system, that are downstream of the broadcast element/s of the system, and are non-fixed-location i.e., mobile, caches, immediate to the end user, or when both arise (i.e. terrestrial broadcast is used together with mobile caches). I.e., while, the specification summary of the application description of a preferred embodiment describe a single specific example of the claims (for conveying in more concrete terms the notion of the invention), that specific example was merely the first of the four following embodiments envisioned as fundamental variants of preferred embodiment detailed in the patent application:

1. satellite/s upstream of fixed caches (w/automated moving and storing)
2. satellite/s upstream of mobile caches (w/automated moving and storing)
3. terrestrial broadcast upstream of fixed caches (w/automated moving and storing)
4. terrestrial broadcast upstream of mobile caches (w/automated moving and storing)

The novelty and utility of this suite of architectures (the categorical architecture of efficient broadcast upstream of local storage, used in an automated fashion for moving and storing of content – which is a new-paradigm diffusion-efficient open-access/long-tail communication and storage architecture that addresses key deficiencies in contemporary and historical communication or storage architectures. It may be more easily understood through the following brief contextualization of the present invention versus the three predominant conventional, contemporary, or historic communication and/or storage network archetypes and the manner of their usage by humans.

In order to more clearly demark and identify where the present inventions and architectures lie, the following table illustrates three conventional, contemporary and historical popular communication and/or storage paradigms: (1) the telephone network, (2) broadcast networks, and (3) the Internet network – classifying each one with five qualitative classifiers. The context provided by the following discussion has been found to offer better insight into the nature and novelty of the present invention, by revealing differences and parallels with the conventional and evolving network archetypes of telephone, broadcasting and Internet networks.

"Telephone network" here means the traditional network of lines and switches operating with connections between pairs of users (sometimes connecting multiple pairs/duos to permit conference calling trios, quartets, etc., but always based on a different connection and line for each user in the group) to a terminal device that is an unenhanced telephone.

The character of the telephone network is known to be interchange oriented vs. dissemination oriented {A1}, since the resources used (telephone lines used) increase in direct proportion with the number of users. The telephone network's access lines, to be made cost effective, are made just sufficient for the application bandwidth: voice (about 3 kHz). The character of the telephone network then, as seen by the user, is narrowband oriented {A2}. Because the terminal device in the telephone network (the telephone) is designed almost exclusively for voice communication, the character of the telephone network is application specific {A3}, with the application being that of voice communication. Although for various reasons the early telephone networks did not at first uniformly interconnect, it was not so long before the preferentiality of a single network led to the evolution of a single telephone network (single in the logical sense, i.e., with most all telephone networks connected together in a single interoperable aggregate network), which persists, by-and-large, today. The character of the telephone network (with the telephone handset as traditional terminal equipment) then, as seen by a typical user, is single-embodiment oriented {A4}. The telephone network was later adapted to include storage for voice-recorded messages, involving storage either at the user's location with a telephone message machine or in the network with voice mail {A5}. These characteristics are summarized in the table below.

In the early part of the 20th century, attempts were made to broadcast video over the telephone network, but it was found that the narrowband and interchange natures of the telephone network did not support video broadcast economically. Meanwhile, the efficiency of radio and television broadcasting through wireless radio transmission was

discovered as providing relatively broadband capability {B2} to move content fairly diffusively – with a dissemination-oriented nature of that moving of content {B1}. As with the telephone network, the utility of broadcast airwaves for the specific purposes of audio or video broadcasting resulted in the deployment of relatively application specific terminals (radios and television sets) {B3}. But different from the television network, there was not an overriding impetus for connecting broadcasting networks together, which could operate separately side by side to good effect {B4}. Because recorded aural and visual content preceded broadcast of that content, origin-side storage was a given; later, destination-side storage was deployed as an augmentation to attach to the network {B5}.

With the innovation of semiconductor technology, highly-capable data processing devices – general or special purpose computers – began to refashion moving and storing content. A most notable and highly-popular new network arose, largely built over the telephone network but also built over cable broadcast networks, that predominantly used general-purpose, personal computers as terminal equipment and special-purpose computer-like devices (routers) at traditional switch centers of the telephone network. The use of predominantly general-purpose, personal computers as terminals for the new network meant that for the first time a popular communication (and storage) network was no longer application-specific in orientation, but now was application-generic in orientation {C3}. At the same time, other attributes of the new network were not unlike the network it was built on top of – remaining largely interchange-oriented {C1} both due to physical infrastructure topology and protocol applied to that topology, and remaining relatively narrowband {C2} as a result of economic inertia presented by the original bandwidth constraints of the telephone network that the Internet was primarily built upon. Usage of the Internet for personal communications again led to a great impetus for universal interconnectivity, leading to the Internet's orientation towards a single-embodiment {C4}. Because of diffusion in computer technology, both origin- and destination-side storage {C5} has been used in the Internet – the world's first popular network for storing generally encoded electronic information that might be shared with others.

Key Classifications of Popular, Shared Communication and/or Storage Network Paradigms		Categories of Classification and Orientation				
		1. Interchange or dissemination oriented	2. Narrowband or broadband oriented	3. Application-specific or application-generic oriented*	4. Single-embodiment or multiple-embodiment oriented	5. No storage or storage (if storage, is storage on the origin or destination side of dissemination)
Network Paradigms	A. Telephone network	{A1} Interchange oriented	{A2} Narrowband	{A3} Application specific	{A4} Single embodiment	{A5} No storage**
	B. Broadcast networks	{B1} Dissemination oriented	{B2} Broadband	{B3} Application specific	{B4} Multiple embodiment	{B5} No storage***
	C. Internet network	{C1} Interchange oriented	{C2} Narrowband	{C3} Application generic	{C4} Single embodiment	{C5} Origin- and destination-side storage****

* As a result of the terminal equipment most-commonly deployed.

** Excepting origin-side or destination-side voicemail.
*** Excepting origin-side playout machines from media libraries or destination-side personal recorders (TiVo, et al.)
**** Primarily origin-side storage of content, but with both origin-side and destination-side storage of email.

With the key classifications and characterizations of contemporaneous and historical paradigms for communication and/or storage network architectures provided above (summarized in the above table) in mind, it becomes possible to see a yet-to-be built new-paradigm, "D.", consonant with the present invention, in which the evolution of A. to C. is paralleled by a new evolution of B. to D. in which dissemination and broadband orientation are retained, but in which application generic orientation is manifested (see table below).

Key Classifications of Popular, Shared Communication and/or Storage Network Paradigms		Categories of Classification and Orientation				
		1. Interchange or dissemination oriented	2. Narrowband or broadband oriented	3. Application-specific or application-generic oriented	4. Single-embodiment or multiple-embodiment oriented	5. No storage or storage (if storage, is storage on the origin or destination side of dissemination)
Network Paradigms	A. Telephone network	{A1} Interchange oriented	{A2} Narrowband oriented	{A3} Application specific	{A4} Single embodiment	{A5} No storage
	B. Broadcast networks	{B1} Dissemination oriented	{B2} Broadband oriented	{B3} Application specific	{B4} Multiple embodiment	{B5} No storage
	C. Internet network	{C1} Interchange oriented	{C2} Narrowband oriented	{C3} Application generic	{C4} Single embodiment	{C5} Origin- and destination-side storage
	D. New-paradigm network & architecture	{D1} Dissemination oriented	{D2} Broadband oriented	{D3} Application generic	{D4} Single embodiment oriented for each of one or more subclasses	{D5} Predominantly destination-side storage**

* New-paradigm diffusion-efficient open-access/long-tail communication and storage architecture

The merits of a dissemination- and broadband-oriented network that is application generic are extensive, overcoming econometric limitations associated with interchange- and narrowband-oriented telephone and Internet networks (especially the first/last mile issue, which is exacerbated multiplicatively by human's net disseminative usages), including not merely overcoming limitations on content volume capable of being efficiently moved and stored but also overcoming limitations on both location and mobility of users (digital divide and mobile applications). Other attributes indicated in the table above are that it would be expected that for each of one or more subclasses of the present invention (including primarily the following 4: 1. satellite/s broadcast upstream of fixed storage, 2. satellite/s broadcast upstream of mobile storage, 3. terrestrial broadcast upstream of fixed storage, 4. terrestrial broadcast upstream of mobile storage), that a single embodiment of the new-paradigm network is likely to evolve – due to the new-paradigm's application to personal communications, for which there is great impetus to universal connectivity – and that, consistent with the architecture described in the present invention, storage is to be predominantly destination-side – as a key point of the present innovation which employs storage downstream from a wireless or non-wireless broadcast network, with the key novelty of automating the admission, moving,

storing and accessing of content to, on, within and from the network with auction and/or other automated processes.

TRANSFORMATION OF INTERCHANGE-ORIENTED STATISTICS TO DISSEMINATION-ORIENTED STATISTICS BY THE COMMON BEHAVIOR OF HUMANS

A further key innovative element underlying the novelty and utility of this new-paradigm diffusion-efficient open-access/long-tail communication and storage architecture is the understanding and application of human behavioral statistics related to the popularly-known 80/20 rule, and the less popular, but more scientifically-rigorous, Zipf Law distributions, the long-tail, et al. The following brief analysis characterizes in a simple manner the differential utility of the new-paradigm diffusion-efficient open-access/long-tail communication and storage architecture over contemporary- and historical-paradigm architectures by comparing the econometrics of the present invention to conventional, contemporary or historical architecture – and when presented with an aggregate human workload as critically interpreted statistically, which reveals novelty and utility in the present invention.

As Huffman coding is a novel and useful encoding based upon knowledge of the statistics of content to be moved or stored (in the Huffman coding case, employing short or lengthy representations in a novel manner in order to efficiently accommodate the statistics of the net content workload, which in the Huffman coding case economizes the resultant net size of the encoded content by using shorter codes for popular contents), the new-paradigm network architecture of the present invention is a novel and useful network architecture that has applied similar insights in a somewhat-parallel innovation – because the network archetype detailed in the present invention affords much more efficient moving and storing by humans by taking advantage of the net statistics of the content being moved and stored, with the key statistical attribute (that renders the innovation useful) being the net disseminative nature of human communications, i.e., that the average/net eventual cardinality of usage of created content is quite large so that the efficient accommodation of the moving of high-cardinality moved content and of storing of high-cardinality stored content provides significant improvement in network econometrics – not just for the high-cardinality moving and high-cardinality storing, but for an aggregate workload of moving and storing in which the average/net eventual cardinality is large, which it always is for workload statistics involving a large sample of content moving and storing activity by humans (essentially paralleling the gains of Huffman coding, both employing efficient accommodation of high-cardinality content, the Huffman innovation being an efficient accommodation of content by special handling of high-cardinality content in a novel code structure, the present innovation/invention being an efficient accommodation of content by special handling of high-cardinality content in a novel network architecture/archetype). I.e., the present invention is based on a knowledge of content statistic to innovate a whole new-paradigm communication architecture that is net more efficient than any conventional, contemporary or historic network architecture for the moving and/or storing of content by a large number of people.

The following analysis considers the aggregate human workload presented to communication and/or storage architectures, concluding that most human moved and stored content is disseminative in nature (so involving redundant moving and/or storing) – involving the repeating or retransmitting or duplication of news, phrases, words and images that are most common. The present invention innovates a new-paradigm communication and storage architecture that incorporates in its fundamental architecture a characteristic of efficiency in the face of redundant (i.e., net dissemination-oriented) communication and/or storage.

Further, this analysis reveals that commonality in human behavior results in dissemination being the net defining character of any aggregate human content management activity (the moving and storing of content) in which common behavior is indeed present, because even though the great majority of created content may be created to be communicated to only one or a small number of recipients, common human*kind* behavior (i.e., as represented by 80-20 rule, where humans tend to do the same *kinds* of things) transforms non-redundant (interchange-oriented) content-creation statistics (statistics of the volume of created content) into redundant (dissemination-oriented) content-moving-and-storing statistics (statistics of the volume of disseminated content). To make this visually clear, consider the following table and associated graphs of the spectrum of created content versus the spectrum of moved and stored content, i.e. the probability density function of created content versus the probability density function of moved and stored content.

Because the feature of conversion from interchange-oriented content creation to dissemination-oriented content movement and storage that I am highlighting has to do with multiplying (1) a volume of created content, by (2) the eventual cardinality of usage of that created content, to get (3) an eventual volume of usage associated with that created content (volume of communication and/or storage resultant from the volume of created content), I graph the probability density functions of (1) and (3) with the variable over which the density is considered being (2) the eventual cardinality of usage of the created content.

And because this same feature (of conversion from interchange-oriented content creation to dissemination-oriented content movement and storage) that I am highlighting arises with rather global-scale consequences of the "80-20 rule" (i.e., due to the consideration of the statistical consequences of the correlated behaviors of thousands, tens of thousands, hundreds of thousands, millions, tens of millions, and even hundreds of millions of people across the globe) – and (2) (cardinality of eventual usage over human populations) is always positive – I employ a logarithmic abscissa axis to permit the global-scale phenomena to become more easily visible.

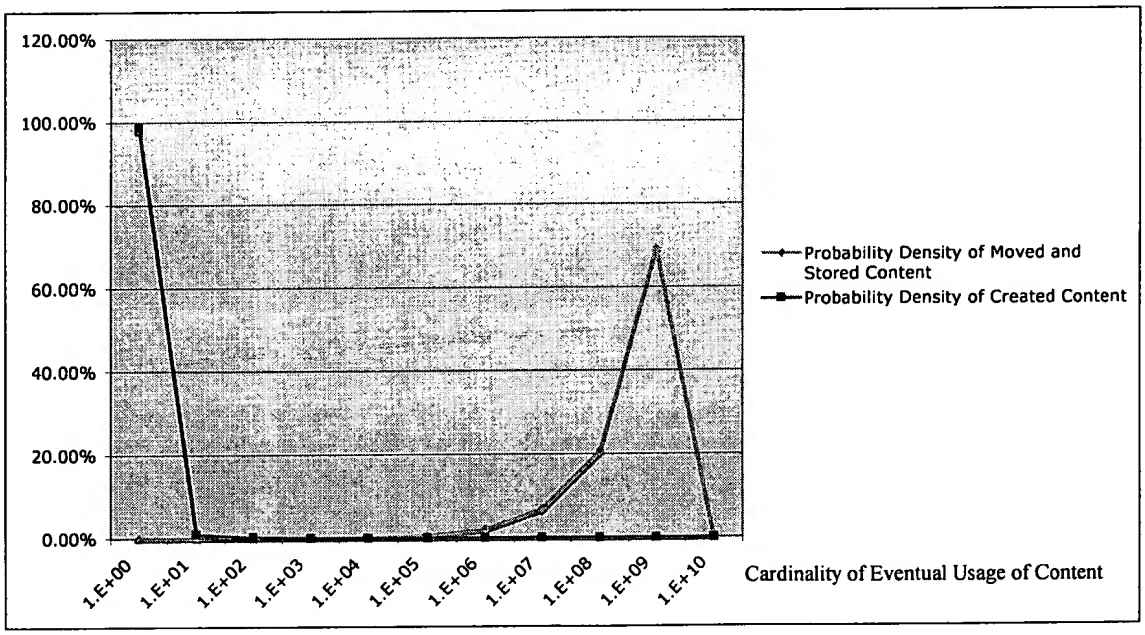
Table – Example Hypothetical Probability Densities Associated with Creating, Moving and Storing Content

(3) Probability Density of Moved and Stored Content*	0.07%	0.01%	0.02%	0.07%	0.21%	0.69%	2.08%	6.92%	20.76%	69.19%	0.00%

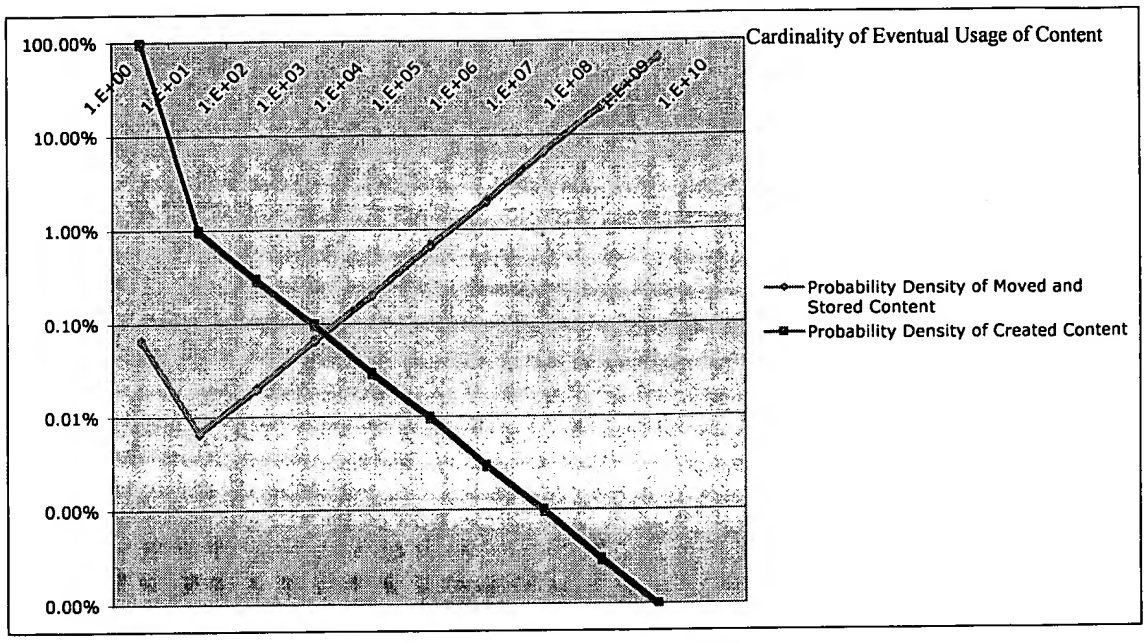
(1) Probability Density of Created Content	98.56%	1.00%	0.30%	0.10%	0.03%	0.01%	0.003%	0.001%	0.0003%	0.0001%	0.0000%
(2) Cardinality of Eventual Usage	1.E+00	1.E+01	1.E+02	1.E+03	1.E+04	1.E+05	1.E+06	1.E+07	1.E+08	1.E+09	1.E+10

* Volume of communication and/or storage resultant from the volume of created content
** Volume of created content.

The "Probability Density of Moved and Stored Content" is simply the normalized product of "Probability Density of Created Content" multiplied by "Cardinality of Eventual Usage" (normalized so that the total probability is 1). The below graph of "Probability Density of Moved and Stored Content" and "Probability Density of Created Content" vs. "Cardinality of Eventual Usage" is perhaps the easiest way to observe the 80-20-rule-like or Zipf Law-like phenomena when applied to any popular human communication and/or storage network or in consideration of any newly-conceived popular human communication and/or storage network architecture, such as the present invention.



For better visualization across the whole spectrum of cardinality of eventual usage of content, the above graph is repeated below with log-ordinate scale.



What becomes apparent from these graphs is indeed the transformation of a highly interchange-oriented (non-redundant) Probability Density Function of Created Content to a highly dissemination-oriented (redundant) Probability Density Function of Moved and Stored Content. While the exact values of each of these probability density functions are not known precisely, the character of these probability density functions – especially the great difference in character illustrated above – is consistent across a wide array of input spectra. Real life probability density functions for the above two variables possess the character of transformation from interchange- to dissemination-oriented represented in the above graphs so long as people have common interests (i.e., always).

A clear understanding of the above transformation can substantially aid in one's understanding of the novelty and utility of the present invention, because the unique combination and arrangements of elements and processes in the present invention (of wireless or non-wireless broadcast with downstream storage caches all coordinated autonomously to present opportunity for a great plurality of content to be deployed, moved and stored over the system) uniquely leverages the 80-20 rule or Zipf Law-like properties inherent in human behavior (as characterized in the above graphs) that permit the present invention to offer superior econometrics and performance.

SOME REASONS WHY THE PRESENT INVENTION IS NEW AND USEFUL

Seeing that most workloads for moving and storing content are net disseminative, do current state of the art networks account well for this? Every redundant transmission over the Internet takes incrementally additional bandwidth (including in the most expensive portion of the network – the access portion). So, no, the Internet does not account well for disseminative content, which results in relatively costly econometrics for the Internet that do not scale well with the disseminative traffic which the Internet is regularly tasked to accommodate.

This has shown up in the extensive bankruptcies of the Internet infrastructure sector during the first major build-out period for the Internet – not only in bankruptcies of new access providers, but bankruptcies of providers at all stages of the network from hosting to backbone to access (Global Crossing, Exodus, @Home Networks, PSINet, etc., etc.).

Where in the Internet architecture dissemination relates predominantly to incremental bandwidth cost (especially access bandwidth), in the new-paradigm architecture of the present invention, dissemination relates predominantly to incremental storage cost. The transposition of redundant storage for redundant bandwidth has vast economic implications. It cost on the order of $1 trillion to wire roughly 10% of humans (about 700 Million people) to the Internet. Yet just 0.1% of that dollar amount (about $1 billion) could buy a global geo-synchronous satellite network that could radiate all the information provided by the Internet (and much more net disseminative workload than the Internet is capable of handling, giving certain assumptions about that disseminative workload as in the above analysis). This analysis focuses on the bandwidth part of the equation. The storage part of the equation becomes the more costly part in the new-paradigm network architecture; but storage costs have consistently declined steeply and an in-depth analysis produced by this inventor reveals that the net econometrics of the new-paradigm network architecture, even including storage costs, can be anticipated to be on the order of 10 to 100 times cheaper than the ~$1 trillion real investment made in Internet infrastructure to date. An even more portentous comparison is the comparison of the cost of extending the Internet (either extending the Internet in capacity to those currently wired, or extending the Internet – at any capacity – to those roughly 85% of people who are today without any access to the Internet) versus the much lower costs of instead building a new network in the novel architecture of the present invention. A detailed comparison made by the inventor here reveals that the new-paradigm architecture is even more compelling in this cases, because the current network was built to the commercial sweet spot of Internet technology – i.e. to those most affluent dense populations in the world – but the Internet was not in general able to be operated profitably there before bankruptcies provided a one-time refashioning of the economic equation for the Internet network as it stands. Providing a video level of service will take adding orders of magnitude more capacity to the current Internet, likely costing multiple trillions to extend the Internet to good video capability to those currently wired. And providing Internet to the digital divide poses a radical economic challenge that is anticipated to be unmet unless orders of magnitude are taken out of the cost side of the equation – as the current invention promises.

1. Claim Rejections under 35 USC§112

Claim 3 is rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear as to what is inputted into the computer telemetry.

RESPONSE - 1

NEW-PARADIGM DIFFUSION-EFFICIENT OPEN-ACCESS/LONG-TAIL COMMUNICATION AND STORAGE ARCHITECTURE

As is described in greater detail throughout this response (to the US Patent Office action and communication re: 09/847,590 "System and method for automated negotiation for and allocation of a broadcast satellite, communication and caching system resource") my invention described in 09/847,590 is of a new-paradigm diffusion-efficient open-access/long-tail communication and storage architecture that addresses key deficiencies in contemporary and historical communication or storage architectures. These first patent applications address the most central and key aspects of the new-paradigm architecture.

KEY INGREDIENTS OF NEW-PARADIGM

The key innovations of this new-paradigm diffusion-efficient open-access/long-tail communication and storage architecture involve the combination of efficient wireless (or non-wireless) broadcasting with downstream storage, which is then transformed in its utility by automating the process of moving and storing *electronically- or other-physically-represented-and-condensed content* (hereinafter, merely "content") through and on the new-paradigm architecture's resources.

TELEMETRY IS A GENERALLY-IMPORTANT ENABLER OF THE NEW-PARADIGM ARCHITECTURE

That the subject of this innovation is an entirely new-paradigm communication and storage architecture seems important, because of the consequence that some of the dependent claims may then arise naturally with a character that might appear to be more general in nature – just as consequential extensions of any core innovation might appear to be more general in nature, even though the extension may be important (even requisite) in certain embodiments in order to effect feasible and efficacious operation of the key (most innovative) aspects of the new-paradigm communication and storage architecture in that embodiment.

While telemetry (the automation of measuring and reporting on a physical parameter) is itself not novel today, telemetry is an important element of the present innovation for a large array of possible embodiments, because the automated negotiation system resources may need to take into account certain time-dependent, place-dependent or other(frequency, person ...)-dependent physical aspects of the system.

While the new-paradigm architecture would be impossible to effect without the automated management system, it might be possible in some embodiments to effect the new-paradigm architecture without telemetry and yet still attain some semblance of the intended value which inherently derives from the nature of the diffusion-efficient, open-access/long-tail new-paradigm architecture. However, typical embodiments of the invention are imagined to benefit substantially by the use of telemetry with the automated management system.

While several of the inputs to the automated system are described in the present claims and patent application with some specificity (inputs that could also be characterized more generally and simply as "telemetry") – specifically describing how those inputs pertain to specific operating characteristics of the entire system (such as bids in an auction for system resources) – Claim 3 ("3. The method of claim 1, with an additional iterated step of: inputting into the computer telemetry (or other automated or manual observations) to be used in the rules.") is intended

to mean measured attributes of the network or attributes of the environment around the network that pertain to it, which are to be fed back into the automation system to permit the automation system to manage network operations with visibility to the state of the system and its environs.

Examples include macro-telemetry (e.g., telemetry dealing with aggregated values, such as average loading of destination caches, average loading of satellites, matrices identifying which users are accessible through which satellites), micro-telemetry (cache-specific and person-specific information regarding content statistics, preferences, utilization levels and times, and so forth), as well as quite a number of other relevant variables which – now that the new-paradigm communication and storage architecture has been conceived, as first related in my patent applications – can be readily seen as required or useful to permit the system to operate reliably and efficiently.

Claim Rejections – 35 USC § 112

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim Rejections under 35 USC 102(3)

Claims 1,3, and 6-17 are rejected under 35 USC 102(3) as being anticipated by Alles et al. U.S. Patent No. 6,466,976 (referred to hereafter as Alles).

RESPONSE – 2

Alles' patent (U.S. Patent No. 6,466,976, "System and Method for Providing Desired Service Policies to Subscribers Accessing the Internet.") deals with the application of data processing rules at an Internet service node that are customized to individual subscribers. The network-architectural context for Alles' innovation is the Internet, and Alles' innovations relate specifically to embodiment within an architecture which is, or which is of like character and architecture to, the Internet.

The present invention is not consistent with the current Internet or similar architecture, so not intended to be or capable of being embodied consistent with Alles. In fact, the present invention arose out of my work based on overcoming the intrinsic econometric deficiencies of the Internet paradigm on which Alles relies, which work informed the distinctly different architecture of the present invention, whose econometric characteristics are of a radically different character than the econometric characteristics of the Internet to the point of overcoming the econometric deficiencies of the Internet, and permitting the provision of a complementary architecture to the Internet architecture for moving and storing content.

Because the innovations of Alles' patent are specific to the Internet architecture, and because the present invention innovated an architecture that is of an entirely different architecture than the Internet, the Alles patent does not pertain to or anticipate the present invention.

Consequently, it is no surprise that the key aspects of the present innovation are not addressed by Alles. Alles does not address the use (either the individual use or the conjunctive use) of the following:

- Satellites (or other wireless or non-wireless broadcast network) feeding storage
- Storage fed by satellites (or fed by other wireless or non-wireless broadcast network)
- Automatically managing the moving and storing of content on the satellites (or other wireless or non-wireless broadcast network) and automatically managing the moving and storing of content on the downstream storage devices

The above trio, in conjunction, represents unique innovation of the present invention in an embodiment of the new-paradigm.

ALLES innovations specifically involve adaptation of the Internet as the network over which "data flows" become subject to additional service policies. The

characteristic of the present invention is to NOT involve the Internet as the network over which moving and storing of content is primarily effected, as does ALLES. Instead the present invention applies service policies TOGETHER WITH a wholly new-paradigm network. The service policies (which could be considered similar to automated negotiation processes discussed in the present invention) of the present invention are required to enable operation of the new-paradigm network, and the new-paradigm network is required to enable application of the service policies (the automated negotiation processes). The one is not useful without the other, and it is the novelty of the arrangement of the wireless (or non-wireless) broadcast with downstream storage with automated management of content moving and storing that is relied on in the present invention. The result is that the new-paradigm network can provide superior economics for open-access/long-tail content diffusion (both content moving and content storing).

The innovations of the present invention involve basic elements and a basic architecture (wireless or non-wireless broadcast combined with local storage, operating in an automated fashion) which elements and architecture are made subject to service policies – via the automated operations – but the architecture involved is distinct from the Internet (or Internet-like) architecture of Alles. I.e., while the innovations of the present invention involve policies, it is the special elements, architecture and processes of the present innovation, all taken together, that result in an innovative solution to the problem of efficiently moving and storing content in a new-paradigm diffusion-efficient, open-access/long-tail communication and storage network architecture, and the innovation of Alles does not speak to this new-paradigm diffusion-efficient, open-access/long-tail wireless-or-non-wireless-broadcast-combined-with-local-storage-operating-in-an-automated-fashion architecture.

As to claim 1, Alles teaches an automated negotiation and provisioning method for broadcast or other communication or storage resources or a system incorporating such resources, in which content is admitted to the individual resources or system, and/or managed within the system via an automated negotiation and provisioning system manager (computer) that allocates resources or directs system operation, comprising the iterated steps of:

inputting into a computer the rules for admission to and/or use of the resources and/or system (see col. 4 lines 42-59 Alles discloses customized service policies to be provided to users),

outputting from the computer a summary of the rules (see col. 12 lines 18-32 and fig 5A, Alles discloses different policy rules),

inputting into the computer offered terms for admission or use by prospective users of the resource or system (see col. 12 lines 24-38, Alles discloses the policy rules for subscribers),

outputting from the computer intermediate determinations and/or final binding terms for successful offer (see col. 12 lines 39-58, Alles discloses rule parameters that are readily available up front).

RESPONSE – 2A- 2D

2A. Perhaps the articulation of Claim 1 may be more clearly understood as an automated negotiation and provisioning method for broadcast or other communication or storage resources or a system incorporating such resources, in which both wireless or non-wireless broadcast and storage form a part of the system and in which there is storage located downstream of the wireless or non-wireless broadcast, and in which content is admitted to the individual resources or system, managed within the system via an automated negotiation and provisioning system manager that allocates resources or directs system operation, which change the econometric characteristics permitting the provisioning of resources to more efficiently map to the traffic mix. This architecture comprising the iterated steps of: inputting the rules into a computer for admission to and/or use of the resources and/or system, outputting from the computer a summary of the rules, inputting into the computer offered terms for admission or use by prospective users of the resource or system, outputting from the computer intermediate determinations and/or final binding terms for successful offers. Hence, Alles contains structural elements similar in to the present invention but do not address the problems for handling traffic mix in the instant invention architecturally different, not Internet, configuration.

As to claim 2, Alles teaches the method of claim 1, with an additional iterated step of: outputting from the computer command signals to resource or system controllers or other system elements that reflect binding determinations from the automated negotiation and allocation process (see col. 12 lines 39-6, Alles discloses rule parameters that are readily available up front and the IP addresss generated).

As to claim 3, Alles teaches the method of claim 1, with an additional iterated step of: inputting into the computer telemetry (or other automated or manual observations) to be used in the rules (see col. 13 lines 1-7).

As to claim 6, Alles teaches the method of claim 1, in which some of the content admitted to the system or controlled by the system is encrypted in order to permit selective access to the content solely by one or another subset of system receivers intended to receive that content (see col. 12 lines 24-32, Alles discloses data encryption using encryption protocol).

As to claim 7, Alles teaches the method of claim 1, in which a parameter representing some number of real or hypothetical receivers is used in the rules (see col. 3 line 6-13, Alles discloses that ISN may be used for serving a large number of subscribers).

As to claim 8, Alles teaches the method of claim 1, in which a guide is used to simplify identification of content traversing the resource or system of resources, such guide providing custom-tailored views of content schedules or repositories permissible to be viewed by a given viewer and either communicated over the resource, system resources, or the Internet (or alternative dedicated or dial-up or virtual data transmission circuits) (see col. 3 lines 16-22, Alles discloses the unique identification of the flow).

As to claim 9, Alles teaches the method of claim 1, in which a guide is used to communicate the status of the rules-based procedure including showing availability of capacity and status of resources and negotiations, such guide being communicated over the resource, system resources, or the Internet (or alternative dedicated or dial-up or virtual data transmission circuits) to system users (see col. 8 lines 11-37, Alles discloses negotiation between two end system and the port information contained in the packets).

As to claim 10, Alles teaches the method of claim 1, in which the content, terms of offers, and other aspects of resource and/or system operation are categorized for rules-processing, allocation, control, and guide purposes according to sets of parameters associated with a plurality of templates, each template including a certain set of parameters (see col. 7 line 51 – col. 8 line 3, Alles discloses the aggregate bandwidth which can be used by a subscriber).

As to claim 11, Alles teaches the method of claim 10, in which the parameters include one or more of the following: temporal parameters, start time, duration, maximum acceptable jitter, periodicity, number of instances, rate parameters, minimum bit rate, maximum bit rate, average bit rate, conditional minimum bit rate, conditional maximum bit rate, second, or third moments of the bit rate, periodici first, second, or third moments of the bit rate, acceptable probability of rate adaptation, decode buffer status, volume of data, interest area, price to prospective content users or viewers, and other rules of access for prospective users or viewers (see col. 2 lines 55-63, Alles discloses the service policy treatment according to data bits at certain time of the day).

As to claim 12, Alles teaches the method of claim 1, in which a cache is used to selectively store content received over a broadcast of communication system resource (see col. 12, line 23-31, Alles discloses storing of the cell).

As to claim 13, Alles teaches the method of claim 12, in which the content admitted to the cache is decrypted (if it had been encrypted) and then re-encrypted (or encrypted for the first time) for controlling access of the content as it is used from the cache (see col. 12 lines 24-38, Alles discloses the encryption of the data).

As to claim 14, Alles teaches the method of claim 12, in which the cache is positioned directly downstream of a broadcast receiver and positioned directly downstream of the cache is a high-bandwidth localized computer network (see col. 13 lines 1-15, Alles discloses allocation of bandwidth to different connection sharing available bandwidth).

As to claim 15, Alles teaches the method in which the inputting and outputting take place on different computers connected via a network (see col. 6 lines 43-51 and fig. 1 Alles discloses a network with multiple users).

As to claim 16, Alles teaches the method in which the inputs derive from either real-time elections of agent-actuated elections according to preset condition-based elections (col. 4 lines 43-56 Alles discloses the rules of service).

As to claim 17, Alles teaches the method in which some or all of the steps are recorded and reported to cooperative billing, conditional access, or other cooperative process or system (see col. 4 lines 57-59).

2B. Pertaining to the claim 2- 17 rejections above, and as described for claim 1 above response 3A, the present invention pertains to automating the provision of resources of a network that utilizes storage downstream from wireless or non-wireless broadcasting, which together form a new-paradigm network architecture that is of completely different kind and characteristic than the Internet, so not taught by Alles at all, who relies on a simple adaptation of the Internet architecture to augment the Internet with service policies. As discussed, the net disseminative nature of human communications is relied on in the present invention, which disseminative nature of communications renders the Internet – including Alles' adaptation of the Internet – grossly inferior to the new-paradigm network architecture of the present invention for efficient content moving and storing for highly net disseminative workloads. Moreover, this automated negotiation and provisioning method for broadcast or other communication or storage resources or a system incorporating such resources is dependent on and inherits novelty from claim1.

Claim 19 is rejected under 35 USC 102(e) as being anticipated by Dinwoodie U.S. Patent No. 6,415,269 ("Interactive Remote Auction Bidding System" referred to hereadter as Dinwoodie).

2C. Dinwoodie is concerned with using a communications network to automate bidding. Bidding could in some instances be an important component in a system based on the present innovation, but in and of itself, bidding is not at all equivalent to the innovation, nor does electronically-remote bidding anticipate or teach the present invention, whose conceptualization is squarely in the place of innovating an entire new-paradigm network architecture – that is, in part, enabled by an automated system that could involve electronically-remote bidding for capacity on the automated system. The present invention includes several synergistic elements, any of which by themselves is relatively mundane, unempowered, and impotent to the problem of efficiently moving and storing content – but which elements, when taken together as prescribed in the present invention, provide the solution to moving and storing content, by hypothesis and analysis shown above, economically far superior to the Internet or other networks for efficiently moving and storing content.

I.e., Dinwoodie does not address the use (either the individual use or the conjunctive use) of the following:

- Satellites (or other wireless or non-wireless broadcast network) feeding storage
- Storage fed by satellites (or fed by other wireless or non-wireless broadcast network)
- Automatically managing the moving and storing of content on the satellites (or other wireless or non-wireless broadcast network)
- Automatically managing the moving and storing of content on the downstream storage devices

As to claim 19, Dinwoodie teaches a method for aggregating system users into a communications neighborhood, community, or other focal area comprising:

Using multiple access sharing techniques (such as TDMA, SDMA, CDMA, FDMA, a combination thereof, or other multiple access technique) for sharing a communications channel (see col. 5 lines 38-45, Dinwoodie discloses a predetermined time for each participant to place a bid);

In which the communications channel provides connectivity to a plurality of receivers, each of which may use the communications channel for internal communication; communication with partners, communication with suppliers, communication with customers, or other entity (see col. 3 line 66 – col. 4 lines 7, Dinwoodie discloses communication paths between remote locations and auction site).

2D. While that may be true, Dinwoodie does not address the key novel elements of the present invention which are not consonant with mere remote electronic bidding.

3. Claim Rejections under 35 USC § 103

The following is a quotation of 35 USC 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4, 5, 18, and 20-28 are rejected under 35 USC 103(a) as being unpatentable over Alles and further in view of Dinwoodie U.S. Patent No. 6,415,269 (referred to hereafter as Dinwoodie).

As to claim 4, Alles failes to teach the method in which the resource or system of resources includes a geo-synchronous satellite, however, Dinwoodie teaches the method in which the resource or system of resources includes a geo-synchronous satellite (see col. 3 line 6-17, Dinwoodie discloses a network that include satellite communication system). It would have been obvious to one of the ordinary skill in the art to incorporate the geo-synchronous satellite in Alles because doing so would enable the participation of prospect bidders at remote location.

3A. Alles fails to teach a method involving satellites, and Dinwoodie's method discloses a potential use of satellites which is of a completely different nature – in which satellites are merely used to facilitate distribution of electronic bidding information, not using satellites (or other wireless or non-wireless broadcasting) as does the present invention – i.e., in a new-paradigm communication architecture with superior econometrics arising from a conception aligned to the diffusive nature of human activities involving moving and storing content.

As to claim 5, Dinwoodie teaches a terrestrial-based wireless transport (see col. 3, lines 6-17).

As to claim 18, Alles does not teach the method in which a transactions is effected either creating automatic charges or debits to an account or initiating an instant transfer of funds, however Dinwoodie teaches the method in which a transaction is effected either creating automatic charges or debits to an account or initiating an instant transfer of funds (see col. 6, lines 51-60, Dinwoodie discloses the capabilities of receiving bids from participants having multi-cultures, languages and currencies) (see col. 6, lines 51=6-, Dinwoodie discloses the capabilities of receiving bids from participants having multi-cultures, languages and currencies). It would have been obvious to one of the ordinary skill in the art to incorporate creating automatic charges or debits to an account to insure the transfer of funds in case the bid is accepted.

As to claim 20 Dinwoodie teaches the method in which the rules for admission or control aim to maximize some objective, such as: the unit price for some commodity measure, thte total number of users, or total revenue (see col. 5 lines 12-17, Dinwoodie discloses the generation of bid by pressing the pound "#" symbol key on keypad).

As to claim 21, Dinwoodie teaches the method in which the rules involve one of a number of auction structures, such as: sealed bid auction, first price auction, discriminatory auction, second price auction (Vickrey auction), uniform price auction, open bid auction, English auction, Dutch auction, all-pay auction, or common value auction (see col. 5 lines 10-21 Dinwoodie discloses the beginning of accepting bids). As to claim 22, Dinwoodie teaches the method in which the rules involve one of a number of options structures (see col. 4 lines 44-47, Dinwoodie discloses auction data).

As to claim 23, Dinwoodie teaches the method in which the rules are specific with regard to the time period during which offers may be input, and the inputting of offered terms is during that time period (see col. 5 lines 7-22 Dinwoodie discloses the cycle time during which bids are accepted).

As to claim 24, Dinwoodie teaches the method in which the rules are specific with regard to the time period during which delivery, control, and/or storage would take place, and the outputted control signals correspond to that time period (see col. 5 lines 38-44 Dinwoodie discloses the participant is locked out if a bid is not received after a predetermined time).

As to claim 25, Dinwoodie teaches the method in which the rules involve successive stages each involving one or more of the methods herein described, each method used either independently or in combination with other methods, where successive stages are begun or ended by rules-based determinations (see col. 6 lines 19-29. Dinwoodie discloses visual acceptance signal with accepted bid).

As to claim 26, Dinwoodie discloses the method in which subscribters, content recipients, viewers, other system users or prospective users provide information to the computer regarding changes in subscription status, election of pay-per-view event options, viewing of a given content segment, or other feedback of interactive message to be used in associated reporting and billing processes (see col. 6 lines 51-60, Dinwoodie discloses the communicating of bids utilizing input devices).

As to claim 27, Dinwoodie teaches the method, in which a graphical user interface is used as the remote client interface for the entity (or entities) seeking to effect content delivery, control, or storage, where the graphical user interface is linked to the computer via the Internet or dedicated or dial-up or virtual data transmission circuits, and where the remote client interface is automated with a software agent acting as a proxy for the remote entity (see col. 6 lines 19-29, Dinwoodie discloses the a visual acceptance signal with accepted bid amount).

As to claim 28, Dinwoodie teaches the method in which a contract is established between parties in advance of enactment of their respective roles for any implementation of said contract establishing the legal basis for the procedures of such an implementation (see col. 6 lines 19-29).

3B. As I describe above, the present invention pertains to automating the provision of resources of a network that utilizes storage downstream from wireless or non-wireless broadcasting, which all together forms a new-paradigm network architecture that may use remote bidding (in general it requires a methodology to automate the moving and storing of content on/over/between network elements) but remote bidding is not the innovation here, and this new-paradigm innovation is not taught or anticipated by Dinwoodie at all, who only presents the innovation of electronically remote bidding.

4. The prior art made of record and nor relied upon is considered pertinent to applicant's disclosure

Connectionless communications Network U.S. Patent No. 6,480,495 by Mauger et al. Method for Discriminating and routing Data Packets Based On quality Of service requirement U.S. Patent No. 6,522,658. By Roccanova.

RESPONSE - 4

MAUGER
"Connectionless Communications Network"

Mauger is concerned with controlling admission of connection-oriented, live "calls" (i.e., a two-way communications from one party to a second, specifically-identified party) in a connectionless non-geostationary satellite network. The moving and storing of content which is the subject of the present invention will in the vast majority of cases never involve such a two-way "call", but will predominantly involve a different subset of the universe of content that is moved and stored. In particular, Mauger concerns its innovation with moved, not stored content – whereas the present invention concerns itself primarily with moved content that is also stored (in the great majority of cases).

In the minority of cases where the present invention could be used to merely move content, without storing, the present invention is distinct from Mauger in that the move-only activity, being a specially abbreviated case of the more common activity of both moving and storing, is done in the present invention within the new-paradigm architecture and processes (which Maugers calls are not) which process is an automated process that handles both moving and storing.

Mauger does not address the use (either the individual use or the conjunctive use) of the following:

- Satellites (or other wireless or non-wireless broadcast network) feeding storage
- Storage fed by satellites (or fed by other wireless or non-wireless broadcast network)
- Automatically managing BOTH the moving and storing of content on the satellites (or other wireless or non-wireless broadcast network) and automatically managing the moving and storing of content on the downstream storage devices

ROCCANOVA - "Method for Discriminating and Routing Data Packets Based on Quality-of-Service Requirements"

Roccanova is concerned with employing one or the other of two spread spectrum codes to select which of two paths a signal is to transit – either a LEO or GEO satellite. This is of no particular relation to the present invention, which is not anticipated to (but could) employ spread spectrum encoding. The use of one or

another spreading code to indicate which of two satellites a signal should transit is not included in the present invention.

Roccanova does not use, either the individual use or the conjunctive use, of the following aspects of the present invention :

- Satellites (or other wireless or non-wireless broadcast network) feeding storage
- Storage fed by satellites (or fed by other wireless or non-wireless broadcast network)
- Automatically managing the moving and storing of content on the satellites (or other wireless or non-wireless broadcast network) and automatically managing the moving and storing of content on the downstream storage devices

Thus the Mauger and Roccanova inventions are not infringed.

If any matters can be resolved by telephone, Applicant requests that the Patent and Trademark Office call the Applicant at the telephone number listed below.

Respectfully submitted,

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